

## Geology, alteration, mineralization, geochemistry, and interpretation of IP/RS data of Bot-e-Gaz prospect area, Khorasan Razavi province

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**Abstract:** Bot-e-Gaz prospect area is located 34 km north of Torbate-e-Jam, Khorasan Razavi Province. Geology of the area includes diorite, granodiorite, and syenogranite intrusinos that intruded in metamorphic rocks. Magnetic susceptibility of intrusive rocks is  $<5 \times 10^{-5}$  SI and belong to ilmenite series (reduced type). These intrusive rocks are metaluminous to peraluminous and vary from medium potassium calk-alkaline to shoshonite series. Four types of alterations were identified, which includes propylitic, sericitic, silicification, and carbonation – silicification. Mineralization is vein-type with NW-SE direction and N60E slope, which formed on the boundary of hornblende biotite granodiorite with metamorphosed sandstone and inside this metamorphosed unit. The hypogene minerals are galena, sphalerite, quartz, calcite, as well as minor chalcopryrite and pyrite. Anomalies of Pb (up to 9% ppm), Zn (up to 2.5% ppm), Cu (up to 7039 ppm), Ag (up to 226 ppm), Sb (up to 334 ppm), and As (up to 533ppm) are present in lithochemical analysis, which are related to the vein-type mineralization. IP/RS studies was done in nine profiles perpendicular to the sulfide mineralization zone using Dipole- Dipole method, which showed two main anomalous zone. The first anomalous zone with NW-SE trend is well coincided with old tunnel and previous working. Mineralization and geochemistry studies indicate development of sulfide minerals in this portion of the area. The second anomalous zone exists in northeastern part of the district as relatively small area. Mineralization extent to the north and northeast of the area and is limited to the southeast, which is related to the fault on the area. Mineral assemblages, form of mineralization, alteration type and their distribution, geochemical anomaly of Pb and Zn  $\pm$  Cu, and higher content of Sb relative to Bi associated with Galena indicate that mineralization is low temperature epithermal.

**Keywords:** *Vein-type mineralization; lead and zinc; Bote-Gaz; IP/RS data.*

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